Space Weather Forecast

Issued on Wednesday, 09 February 2022 at 01:23 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Likelihood of G1/Minor Storm activity on day 1 (09 February) and a chance on day 2 (10 February), associated with CME arrival. Active electron fluence expected days 1 and 2 (09 February). Chance of M-class flares.

Analysis of Space Weather Activity over past 24 hours
Solar Activity: Solar activity has been low over through the last 24 hours, with occasional Common-class X-ray flares. The source of flares has been mainly from a mature region in the southeast quadrant, but also due to a large region in the northeast of the visible disc. A further region in the northwest also has the potential to produce significant flare activity. A new region in the southeast quadrant is small and currently benign. No Earth directed CMEs (coronal mass ejections) have been observed in available imagery.

Solar Wind / Geomagnetic Activity: The solar wind has declined through the last 24 hours and is now close to background levels. Total magnetic field strength has been weak, with the north-south component also varying weakly. Geomagnetic activity was Quiet (Kp 0-2).

Energetic Particles / Solar Radiation: No solar radiation storms have been observed.

Four-Day Space Weather Forecast Summary
Solar Activity: Solar activity is expected to remain low through the next four days, with a chance of isolated Moderate activity due to the three large regions on the solar disc.

Solar Wind / Geomagnetic Activity: A CME which left the Sun on 06 February is forecast to arrive at the Earth on 09 February, with disturbances in the near-Earth space environment perhaps observable for the following two days. A fast wind is then expected to affect the Earth from late on day 4 (12 February). Geomagnetic activity is expected to start Quiet to Unsettled, with Active periods expected and a likelihood of G1/Minor Storms or G2/Moderate storms due to the CME arrival. Residual and decreasing effects of the CME are then possible through days 2 and 3 (10 and 11 February). The onset of the fast wind on day 4 may the produce further G1/Minor Storms.

Energetic Particles / Solar Radiation: Solar radiation storms carry a daily slight chance of rising close to, or just above, the S1 level given any significant moderate-class X-ray flaring.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	60	40	10	20
Strong	G3	No	10	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	30	30	30	30
Very Active	R3 to R5 X	No	2	2	2	2

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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